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Intergenerational correlations of health among older adults: Empirical evidence from Indonesia

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ABSTRACT

It is widely believed that family background has a significant influence on children's life. The vast majority of the existent literature has focused on the relationship between parents' education and income and the education and income of their children. Surprisingly, much less work has been done on the intergenerational transmission, or correlations of health. The main objective of this paper is to examine the correlations of health across generations using the Indonesia Family Life Survey (IFLS). We take advantage of the richness of IFLS and examine several health measures of respondents, including self-reports and physical measurements. As measures of health of both parents, IFLS has information on whether they are dead at the time of the last wave in 2007, their general health status and whether they have difficulties with any ADLs at the time of the survey or in the year before death. The findings suggest strong intergenerational correlations between the measures of parental health, schooling, and the health of their adult children. We also examine how these intergenerational correlations might differ for respondents born in the more developed parts of Indonesia compared to the less developed areas. Interestingly, these health associations are lower for respondents who were born in Java or Bali. These are areas of Indonesia that have experienced the most rapid economic growth over the past 40 years. This suggests that being born and growing up in developed areas, which may have better health infrastructure, substitutes for the influence of parental health.

Introduction

It is widely believed that family background has a significant influence on children's life. For instance, Bowles and Gintis (2002) show that economic status is transmitted from parents to offspring and moreover, the extent of intergenerational transmission of economic status is considerably greater than what people generally thought it to be a generation ago.

The vast majority of the existent literature has focused on the relationship between parents' education and income and the education and income of their children. Surprisingly, however, much less work has been done on the intergenerational transmission of health, although more has been done recently (eg. Almond and Chay, 2006; Currie and Moretti, 2007; Bhalotra and Rawlings, 2009, 2011; Venkataramani, 2011; Thompson, 2014). Health is regarded as an important part of human capital. Better health makes people more productive, and in turn may increase future earnings whereas poorer health causes low productivity, lower happiness and more expenditure on medical care, leading to reduced income and less opportunities for wealth accumulation. Therefore, it seems reasonable to extend our research interest towards dimensions of health.

The main objective of this paper is to examine the correlations of health across generations using the Indonesia Family Life Survey (IFLS). The IFLS is a panel survey covering 14 years from 1993 to 2007 and collects extensive information at the individual, the household, and the community level, including indicators of economic and non-economic well-being. In particular, the survey contains a rich set of information on health outcomes of respondents, including both physical health measurements such as anthropometrics and self-reports. IFLS is a well suited data set for our research because it includes detailed information about parents even if they live apart from their children and the information is collected either at the time of the survey or from the 12 months prior to death if they are dead. IFLS thus allows us to capture the latest health information of each parent. These parental health variables, together with measures of parent's education, are used in this paper as covariates to explore the intergenerational

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correlations of health with health measures of older respondents, while controlling for age of the respondent. We also examine how these correlations differ between respondents born in more advantaged regions of Indonesia, Java and Bali, versus other regions of Indonesia, which tend to be less advantaged.

We take advantage of the richness of IFLS and examine several health measures of respondents, including self-reports and anthropometrics: a measure of self-reported general health status; the number of measures of physical function and activities of daily living (ADLs) that the respondent reports having difficulty in conducting; the number of instrumental activities of daily living (IADLs) the respondent reports having difficulty with; and being underweight (<18.5 body mass index-BMI) and being overweight (BMI $\geqslant$ 25)[1].

As measures of health of both parents, IFLS has information on whether they are dead at the time of the last wave in 2007, their general health status and whether they have difficulties with any ADLs at the time of the survey or in the year before death.

To focus on older adults, the sample is restricted to respondents who are 50 years and older in 2007. This paper uses multivariate analysis in order to examine the intergenerational transmission of health. First, a cross-sectional analysis is employed by using the information from IFLS4; this allows us to investigate the maximum number of health outcomes. Dependent variables, in this case, are the measures of respondent health status measured in 2007. Having parental health variables and schooling as right-hand side variables along with respondent's age at baseline enables us to look at the intergenerational correlations with the levels of health measures as well as for the changes in health. Second, a simple growth model is used with changes in a restricted number of health measures from 1993 to 2007 as outcome variables. These growth or change regressions are estimated for respondents who were 50 and above in 2007 and interviewed for both 1993 and 2007. We are interested to examine how the intergenerational correlations with parental health may differ between the change in health and the health levels regressions. We also examine how these intergenerational correlations might differ for respondents born in parts of Indonesia that were developing more rapidly, compared to areas developing less rapidly. Currie and Moretti (2007) have found weaker intergenerational correlations of health in the United States for parents born in better off areas. Bhalotra and Rawlings (2009) have found a similar result using cross-country evidence.

We are trying to capture the "full" associations between parental human capital, including parental health when they are older, and the health of older respondents. Because of this we do not control for factors that may respond to parental schooling and health, such as respondent education. There are many potential pathways that may lie behind intergenerational correlations of health, both genetic and environmental, and interactions between the two. Parental health behaviors may be passed on to their children, such as smoking, eating, exercise and drinking habits. Intergenerational transmission of schooling undoubtedly plays an important role in the transmission of health, children who are better educated tend to have better health behaviors, at least in some dimensions, have higher income, and may have different preferences. Parents with poor health likely live in less well-endowed communities with lower quality health environments and public health infrastructure. Unlike some papers such as Currie and Moretti (2007) or Thompson (2014) we do not try to distinguish different potential pathways, we are only interested in the strength of the overall associations.

[1] In Kim et al. (2011) we examine additional outcomes: low hemoglobin, hypertension, a score of depressive symptoms, a word recall cognition test, high cholesterol and low HDL cholesterol.

We are also careful not to interpret these relationships as necessarily causal, because there exist the usual issues of omitted variables and possibly measurement error in parental health. If an elderly parent is still alive, for instance, this is an indication that that parent has had good health, which may well have indeed been transmitted to the respondent. However many other factors may be associated with this as well, such as a good health and nutrition environment when the respondent was young or good health behaviors of the respondent as a child and as an adult, which may partly have been influenced by health behaviors of the parent. On the other hand, a parent having survived to 2007 also will be correlated with high levels of SES of the parent, which may have different effects on respondent health. Still, given the dearth of estimates of intergenerational correlations of health, we think that these findings make a useful first step contribution to the literature.

The findings suggest strong intergenerational correlations between the measures of parental health, schooling, and the health of their adult children, stronger in fact than associations between schooling of these same children and the same health variables. For example, if parents had more difficulties with ADLs, their children are more likely to have the same problem when they become older adults. Having a dead father is associated with increases in the number of ADLs and IADLs that women report having problems with, and a higher likelihood of being underweight for women. Having a dead mother is correlated with a greater likelihood of being underweight for both men and women, and also with reporting poor health for women.

The health correlations are stronger in magnitude for the cross-sectional analysis using the 2007 wave than are the changes between 1993 and 2007. This suggests that the intergenerational influences are already established by 1993 when the respondents enter the survey for the first time, at which the time they are 36 years and over.

These health associations are much lower for respondents who were born in Java or Bali. These are areas of Indonesia that have experienced the most rapid economic growth over the past 40 years, but that were also more developed than other areas of the IFLS sample in the past (Dick et al., 2002). This suggests that being born and growing up in developed areas, which may have better health infrastructure, substitutes for the influence of parental health.

The rest of the paper is organized as follows. Second section provides a brief review of the related literature. Data description and the empirical specification used are described in the third section. The main regression results are discussed in the fourth section. Concluding remarks follow in the last section.

Literature review

Although there are numerous studies which analyze the intergenerational correlation of earnings, wealth or education, a limited number of studies exist that examine intergenerational correlations of health. The pathways that may lead to such correlations include intergenerational transmission of health from parents when they were young children to respondents when they were young, and subsequent impacts of health during early childhood on health in later life. Other pathways may exist as well.

A growing literature now exists that investigates the associations between early childhood health and later adult health (see, for example, Elo and Preston, 1992; Barker, 1994; Godfrey and Barker, 2000; Crimmins and Finch, 2004, 2006; Case et al., 2002, 2005; Smith, 2009; and Almond and Currie, 2011, amongst many papers). Some papers have looked at associations between height and health outcomes as adults, generally finding strong relation-

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